



Ø BEAT

COLORADO SPRINGS,
COLORADO

NOVEMBER 1983

Another Handy Little Gadget . . .

An Audio Multiple Distribution System

Stephen Mendelsohn, WA2DHF
ARRL Hudson Division

The time comes in any ham's life when he is called on to do public service work of one type or another. If he is public relations oriented he may want to take the audio from his receiver and feed it to several broadcast audio tape recorders, or the audio input to a commercial video tape recorder. These devices all use a 600 ohm balanced input. The receiver frequently has an output that is 8 ohms, unbalanced. The trick of designing an audio multiple output distribution system, or "multi box" as it is known in the broadcast trade, is to match the drive impedance (the receiver) to the load impedance for the broadcast equipment. Levels are the second thing that one must match. The input to most of the broadcast equipment is either "mic" level which is -45 to -60 dB at 600 ohms, or "line" level which is -10 to -25 dB at 600 ohms. The output of the average receiver, whether 2 meter fm or low bands, will vary between +6 and -10 dB at 8 ohms. Now that we have all of the required data, how do we make it all work together?

If you take the output of your headphone jack and connect it to the line input jack on a piece of professional equipment, you may wind up with lots of hum and distortion. This is because the impedances are badly mismatched. To use an antenna term, the SWR is too high. The hum will be from a lack of isolation. What we need is a resistive

device that will perform three functions. 1) Isolation of the source from the load; 2) Match different impedances and 3) Drop the line level output of the receiver to a mic level satisfactory for the broadcast equipment. This requires the design of two different types of audio pads. Each pad is designed using common resistors that could be assembled on a standard perf board using "flea" clips to allow connections to be made to the equipment.

Section A of the pad is a standard "O pad". It acts to give isolation, and match impedances. Because not all receivers give the same audio output, several values of resistors (listed in table 1), which will give various levels of attenuation. In all cases the driving impedance is 8 ohms, and the load impedance is 600 ohms.

Section B of the pad is designed to take a single input and produce 4 outputs at 600 ohms with a 12 dB loss between input and output. In each case the four outputs will be isolated from each other, and provide correct level. All resistance values are 610 ohms for this section.

The resistors are all standard value half-watt types that can be found in a junk box or purchased at a parts store for a dollar or two. The resistors may be laid out in any fashion within reason. Keep the leads short since RF can creep into anything. In most cases, the broadcast equipment will be clipped on with small alligator clips provided by the reporter, but it doesn't hurt to have a Sony type

Continued on Page 4

P.P.R.A.A. DIRECTORS

| | | |
|--------------|-----------------------------------------------|----------|
| PRESIDENT | * Joe Quintana NØEMN 308 N. Foote 80909 | 635-2251 |
| V. PRESIDENT | * Al Vrooman NØCMW 1341 Diana Ln. 80909 | 473-1660 |
| SECRETARY | * Mark Richardson NØEPF 24 N. Union 80909 | 473-1799 |
| TREASURER | Les Borst KCØNC 2542 E. Bijou 80909 | 634-3995 |
| Board Member | Charlie Biggs KCØTI 302 Quebec 80911 | 392-1476 |
| Board Member | * Frank Drake KL7IPV 4964 Harvest Rd. 80917 | 597-2406 |
| Board Member | Jake Jacobs NØCYR 104 Old Broadmoor Rd. 80906 | 634-2223 |
| Board Member | Dave Vierling NØDV 2511 N. Tejon 80907 | 473-0293 |

ZERO BEAT is published monthly in the interest of the the members of the Pikes Peak Radio Amateur Association Inc., Colorado Springs, Colorado. Permission is given to reprint articles or excerpts provided credit is given. Deadline for submission of articles is the 21st of the month. Classifieds accepted anytime.

The Pikes Peak Radio Amateur Association meets on the second Wednesday of each month at the Palmer House Motel, I-25 and Fillmore, at 7:30 p.m. All amateurs and interested parties are invited to attend.

Editor: Don Lohse KBØKQ, 1410 E. LaSalle, Colorado Springs, CO 80907 635-7469.

MEETING MINUTES

The regular meeting of the Pikes Peak Radio Amateur Association, was called to order at 7:37 p.m. October 12, 1983. Forty members and guests were present.

Minutes of the previous meeting as printed were changed to read "20 prospective novices are **taking** the classes." The minutes were then approved. Les, KCØNC, reported the treasury had a balance of \$2470.19 after expenses of \$111.75.

Darla, WBØDUV, came down from Denver to congratulate the club on their new designation as a Special Service Club. The PPRAA is the first in Colorado to receive the honor. Further materials will be sent to the club.

Darla also presented a number of goals that Bill Sheffield, KQØJ, has set for the Rocky Mountain division: a communications van, a repeater to cover a several state area, a Rocky Mountain Division Convention in Denver, more coordination with other communicators, more SET involvement, improve the NTS system, and improve the official observer system. Darla also announced that Steve, WA1RFR, has been appointed the new RFI coordinator.

Most people felt the Iron Springs Chateau was the most acceptable for the Christmas Party. More information will appear soon.

Oak moved, Mark seconded, that the club spend \$15.00 for a hot stamp badge to be made with the club logo. The motion passed. A badge will be available for viewing at the next club meeting. A personal badge will cost 70¢ plus 10¢ per letter.

Mark, WB9NFE, section chief for the RTTY section of the National Guard spoke briefly in looking for a volunteer to join in order to fill a slot in that section.

Joe presented the idea of locating the club

station at the Nazarene College. Ken moved, Bud seconded, to pursue negotiations with college officials; motion passed. A proposal will be worked up.

The election results are as follows:

President — Joe, NØEMN
Vice-President — Al, NØCMW
Secretary — Mark, NØEPF
Treasurer — Les, KCØNC
Board Member — Frank, KL7IPV

The next meeting will be November 9, 1983 at the Palmer House.

Respectfully Submitted,
Mark, NØEPF

FOR SALE — Drake T4XC, R4C, P.S. \$375. WB7WGN - 599-9240.

FOR SALE Model 28 Teletype KSR-console type-complete unit-ten rolls each of paper and punch tape. \$100. Dennis Smith WBOYKH-598-3268.

If it's CW, it's communications.

| | | |
|----------|-------------------------------------------------------------------|----------|
| 832-1111 | ALL MAJOR BRANDS SALES SERVICE 8-5:30 Mon.-Fri. 8:30-1 Sat. | 832-1111 |
|----------|-------------------------------------------------------------------|----------|

NORT KØMEV MIKE WBØEKE BOB KØLQF RUSS WBØJUL
John WAØADV



800 Lincoln St. Denver, CO 80203

FCC ADOPTS VOLUNTEER EXAM PROGRAM

At its September 22 meeting, the FCC Commissioners adopted a Report and Order in Docket No. 83-27, concerning volunteer examiners. One way the Report and Order differs from earlier proposals is that it envisions the establishing of regional, as opposed to national, Volunteer Examiner Coordinators, perhaps on the basis of the thirteen call areas (the ten call areas of the 48 contiguous States, plus Alaska, the Caribbean, and the Pacific). Apparently this arrangement was made in case ARRL chose not to participate in the program, in order to expand the universe of potential coordinators.

Another difference is that a "Chinese Wall" (legal jargon for procedures to isolate certain people from access to "sensitive" information) will be required between personnel involved in the administration of the examiner program, and personnel involved in the preparation of study material. The concern is that those preparing the material must not know, nor can the appearance exist of their knowing, the actual questions from the pool that will be used in a given month. This will not necessarily require that a separate corporate identity be established for the VEC function.

The following points are covered in the Report and Order:

1. Provisions have been kept in the FCC rules providing for retest of anyone who receives a license based on an examination administered by volunteers.

Channel

Communications Inc.

20-G EAST MOUNTVIEW LANE
COLORADO SPRINGS, COLORADO 80907

(303) 598-6704

- COMMERCIAL & PERSONAL 2-WAY MOBILE RADIO
- USED & CONSIGNMENT HF, VHF, & UHF COMM. EQUIPMENT
- REPAIR & CALIBRATION OF COMMUNICATIONS & OTHER ELECTRONICS EQUIPMENT

Dick Kohlhaas, W5UDM

2. The program will start with General and Technician; the other two classes will be added later.

3. The program deletes the "team chief" concept. Accordingly, in an exam for General Class, three Advanced class licensees can be the team.

4. A person whose license has been revoked can never be a volunteer examiner even if he or she later reobtains an amateur license.

5. Thirty days advance registration will be required of applicants and the volunteer examiner team must notify the field office in whose district it is when the examinations will take place.

6. Instant upgrading will be permissible.

7. The telegraphy test remains the same as now, i.e. it allows, but does not require, a sending test.

8. The volunteer examiner must be 18 years of age and not related to the applicants. There will be no additional, i.e. "employee-employee," prohibition.

9. Finally, the Order makes it perfectly clear that the volunteer examiner coordinator must admit anyone to all tests, whether or not they are a member or non-member of any organization.

Because editorial changes must be made in the Report and Order prior to release, it will be some days before we see the actual text. In the meantime, don't get too excited about rumors you may hear that run contrary to the above.

Senator Goldwater has indicated to ARRL his willingness to introduce legislation authorizing VECs to recover out-of-pocket expenses for administering Amateur Radio examinations if suitable language for the proposed bill can be agreed upon. We'll update this one as it unfolds.



GTB SYLVANIA
ECG SEMICONDUCTORS



Channel Master
THORDARSON

COLORADO SPRINGS
WALKER ELECTRONICS
2838 NORTH PROSPECT ST.
COLORADO SPRINGS, COLORADO 80907
PHONE - (303) 636-1661

CHEMICALS—TOOLS
WIRE AND CABLE
SERVICE AIDS

LEADER
Instruments Corp.

WHOLESALE DISTRIBUTORS
EXPERIMENTERS ITEMS
HEADPHONES—SPEAKERS
ANTENNA INSTALL. MATERIALS

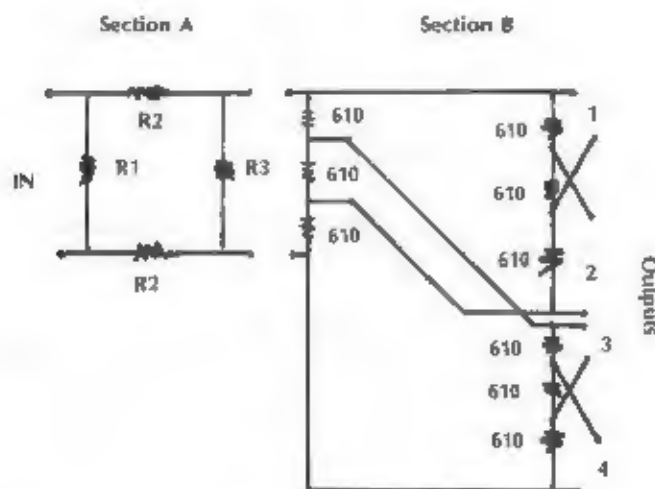
Regency

MICROPHONES

Courtesy ARRL, ARRL Letter

Gadget (cont.)

mini-plug connected to one of the outputs. If you can save the reporter even one step, it will help to assure your story getting on the air. And getting the story on the air is the name of the game in the public relations business.



"O Pad" values

| Attenuation | R1 | R2 | R3 |
|-------------|----------|-----------|----------|
| 10dB | 6.8 ohms | 51 ohms | 620 ohms |
| 10dB | 8.2 ohms | 180 ohms | 620 ohms |
| 10dB | 8.2 ohms | 560 ohms | 620 ohms |
| 10dB | 8.2 ohms | 1.8k ohms | 620 ohms |

INPUT = 8 Ohms from receiver

OUTPUTS = 600 Ohms to recording equipment

AIR FORCE DEMANDS CODE!

The United States Air Force has informed the FCC that it sees a continuing need for Morse Code proficiency, and has recently reinstated the code requirement in its radio operator's course. Furthermore, should FCC adopt its no-code licensing proposal, these licensees would nonetheless be required to demonstrate Morse Code proficiency before being permitted to join Air Force MARS...

THIRD PARTY TRAFFIC

Here is the latest list of countries (by prefix) with which U.S. Amateurs may legally handle third-party-message traffic.

| | | | |
|----|--------------------|-----|-------------------|
| C5 | The Gambia | T1 | Costa Rica |
| CE | Chile | V2 | Antigua & Barbuda |
| CO | Cuba | VE | Canada |
| CP | Bolivia | VK | Australia |
| CX | Uruguay | VR6 | Pitcairn Island |
| EL | Liberia | XE | Mexico |
| HC | Ecuador | YN | Nicaragua |
| HH | Haiti | YS | El Salvador |
| HI | Dominican Republic | YV | Venezuela |
| HK | Colombia | ZP | Paraguay |
| HP | Panama | 3D6 | Swaziland |
| HR | Honduras | | |
| J6 | St. Lucia | 4U1 | ITU, Geneva |
| J8 | St. Vincent | 4X | Israel |
| JY | Jordan | 6Y | Jamaica |
| LU | Argentina | 8R | Guyana |
| OA | Peru | 9G | Ghana |
| PY | Brazil | 9Y | Trinidad & Tobago |
| TG | Guatemala | | |

September 28, 1983

Darla Richardson, WBØDUV, ACC
1184 W. 101 Avenue
Northglenn, CO 80221

Dear Darla:

We are pleased to report that the Pikes Peak Radio Amateur Association has been officially designated a Special Service Club. Through the work of its members, this club is recognized for extended efforts on behalf of Amateur Radio and service to its community. We would like this recognition to begin by asking you to contact the club informing them of their success.

Shortly, the club will receive from Headquarters periodic mailings of materials and information to ensure that it remains an active and viable part of the amateur community. We would also like to congratulate you for your outstanding work helping this organization realize its full potential and look forward to your support and assistance in the future.

73,

Edward Raso, WAZFTC
Assistant Club Program Manager

ER: va

cc: William Sheffield, KQØJ, SM

FOR SALE Ham radio & other electronic equipment garage sale. New and used test equipment, computers, hardware & software, 2 meter & HF rigs, power supplies, antennas and so forth. Nov. 19th and 20th, 158 Widefield Blvd., Widefield. Bob NØCTV 392-6106.

Typesetting courtesy Letter Setters

**Centennial ★ ★ RCA
ELECTRONICS**

2324 East Bijou, Colorado Springs, CO 80909
PHONE: (303) 633-4666

BK PRECISION

BELDEN

TRW

The Cooper Group,

GC ELECTRONICS

VIZ

MALLORY

A.R.R.L.

Largest Supply of Electronic Parts
in Southern Colorado

MILEY'S RADIO

Jess KØTAA 719 W. 7th St. Florence, Colorado 81226 784-3040
Hours 8 to 6 and 7 to 9 Tuesday through Friday — 8 to 12 on Saturday. Closed Sunday and Monday.

NEW EQUIPMENT IN STOCK

Kenwood TS 930S Sale \$1375 w/auto tuner \$1530.
Kenwood TS 430S \$775.
430 Power Supply \$134.
Kenwood 430S w/AM filter-shop demo w/warranty \$775.
Kenwood AT130 antenna tuner-shop demo w/warranty \$110.
Kenwood AT250 auto antenna tuner for 430S \$275.
Kenwood VFO 120 \$110.
Yaesu FT 102 \$910 to your door.
Icom 740 \$940 — \$50 Icom rebate & free internal AC supply-\$145, value
Icom 730 \$645.
Kenwood MC 60 up/down desk mike for 430/930 List 79.95-Sale \$75.
Kenwood 4000A 2m & 440 FM Xcvr List \$699 Sale \$549.
Same as above w/ voice synthesizer installed \$589.
Kenwood TR-7950 45W List \$439 - sale \$345.
Kenwood 7930 \$314.
Kenwood TR 2500 HT \$273.
Kenwood TM201A mini 25 watt FM w/ext. spkr \$325.
FC 10 freq controller for 201A-List \$49.95 \$45.
New Sinterc 144uP 2 M HT-Best HT on the Market \$279.
Sinterc 440 uP 440 Mhz HT \$279.
Tokyo Hi Power 32V 2/30 watt 2 mtr FM 55B amp \$24.
Tokyo Hi Power 30V 2/30 watt 2 mtr FM amp \$59.
Tokyo Hi Power 160V 25 watt drive — List \$329 Sale \$279.
Tokyo Hi Power 160V 3/10 watt drive — List \$349 Sale \$289.
Tokyo High Power HC 50 80-10 SWR/watt meter — 200 watt
tuner w/ WARC bands. List \$100 Sale \$79.
Janel QSA 5 2 meter preamp \$35.
Icom 2AT HT Reg. \$269 Now \$214.
Icom IC 4AT 440 MHz HT \$239.
Icom ZSH — 45 W \$340.
New Icom ZSH Green readout \$350.
Icom 251A all mode \$415.
New Azden PCS 4000 \$269.
New Azden PCS 300 HT \$269.
New KDK 2030 mini 25W w/TTM \$240.
Yaesu FY 208R 2 mtr. synth. HT \$269.
Kantronics Interface for VIC 20 and others \$135.
Kantronics Hamsoft for VIC 20 \$46.
Kantronic Hamtext for VIC/Com 64 \$90.
New MFJ 1224 interface in stock \$95.
mmodore 1701 color monitor \$248.

USED EQUIPMENT

Icom 25A w/2 mounting brackets-exc. cond. \$245.
Icom 45A 440 MHz mobile \$280.
Icom 245 in excellent condition \$145.
Icom 730 w/ cw filter-like new \$550.

Icom 701-excellent \$395.
Swan 200 55B-16 80-10 meter xcvr. w/vox. 16 pole filter. 150
watts. Mars coverage w/25 A p.s. \$275.
Kenwood TS 700SP 2 meter all mode Xcvr — AM/PM/CW/SSB \$385.
Azden PCS 2000 excellent condition \$175.
Azden PCS 300 HT — factory repaired \$200.
Midland 13-510 1 & 25 watt 2 meter mobile \$165.
Two Yaesu FT 227R & 227RA 2 mtr. FM mobile \$135 each.
Yaesu FT 620 B 6 meter 55B, CW, AM, AC-DC \$225.
We now handle KLM, Mirage and Henry 2 meter amps of various
wattages — CALL
Hygain TH3 3 element tribander \$150.
Dentron Super Tuner 2 \$75.
Dentron 80-10 AT 200 W tuner \$45.
Tektronix 511A scope-works good \$50.
Heathkit HM2141 VHF dual watt meter 50-175 MHz \$55.
Heath SB 102 w/matching supply, spkr., CW filter, VOX,
processor, new finals and driver, w/manual, digital
read out & freq. counter \$295.
Galaxy 5 w/ AC supply and speaker \$195.
Galaxy DC1000 mobile power supply \$25.
LS 400-12 12 volt power supply for Heath/others \$40.
Collins 75A4 \$150.
Collins crystal pack — 117 crystals in plastic pouch \$200.
Swan Mk. II 2 kw amp w/p.s.-nice shape \$425.
Dentron GLA 1000 1.2 kw PEP amp \$200.
Homebrew amp-kw-4 B11-A's, heavy duty supply \$150.
Hammerlund HQ 100 w/matching spkr., gen. cov. rcvr. \$100.
National NC 300 rcvr. w/calibrator-Mint \$125.
Realistic DX 100 \$100.
Military rcvr. 2-18 MHz, works good \$35.
Atlas 210X \$300.
SBE SSTV, complete unit all in one, extra monitor \$300.
Kenwood TS 820S-mint \$549.
Drake TR4CW, RV4C ext. VFO, M54 speaker/supply \$300.
Drake TR 3 80-10 m xcvr. w/RV 3 ext. VFO, spkr. all for \$295.
Drake T4X/R4 w/NB, p/s & spkr-mint \$375.
Regency HR 2T w/desk charger, xtra battery & case \$65.
Various sizes movie projector lamps-120V \$3 each.
Wide selection of amateur antennas-base, mobile,
HF, VHF, UHF at reduced prices
We now stock Hygain, Hustler and KLM antennas

The new ARRL "The FCC Rulebook" — \$3.00
"We handle anything electronic and love to trade"
Much more used & consignment gear — call for info

BOARD MINUTES

The regular meeting of the Board of Directors of the Pikes Peak Radio Amateur Association was called to order at 7:36 p.m. October 17, 1983. Present were Joe NØEPF, Les KCØNC, Frank KL7IPV, Jake NØCYR, Charlie KCØTI, Dave NØDV, Tom ADØO, and Jim KR7J.

Jim volunteered to take over the position of Zero Beat editor. He will coordinate with Don KBØKQ so the transition may be as smooth as possible.

The Board recommended that a calling tree be established to present relevant club information to all members in a timely manner. The item will be presented for discussion at the regular meeting.

Scheduled programs are as follows: November — Red Cross; December — Homebrew Night; January — Solid State Devices.

Frank presented some discussion on fundraisers. He also presented the idea of a club open repeater. This will be discussed more in future meetings.

Joe, Dave, and Frank will coordinate preparations for the club Swapfest April 15th.

The possibility of charging a set fee for a club life membership was discussed. A portion of the money, after expenses, would be earmarked for a club sponsored. Scholarship to deserving students.

Les reminded the Board that the renewal for the P.O. Box was due soon. Mark moved, Frank seconded, to renew the P.O. Box. The motion passed unanimously.

Charlie turned over the inventory list of club equipment to Al. The issue of a storage garage is still being examined.

Al indicated the mall demo at Chapel Hills Mall is scheduled for November 11 and 12. The mall requires a certificate of liability for \$1,000,000 per occurrence. This is standard. Al had already looked into club insurance and presented several possibilities to the Board. Mark moved, Frank seconded, to purchase a year of insurance including \$1,000,000 for the demo. The motion passed unanimously. Mark will contact ARRL about club insurance through them. Al will look into medical coverage and this will be discussed later.

Frank Craw indicated he would take over the public relations chair. He will need to coordinate with Mark.

There being no further business before the Board, the meeting was adjourned at 10:20 p.m. The next Board meeting will be at Jake's, November 14th.

Respectfully submitted,
Mark, NØEPF

MEETING NOTICE

The November meeting of the Pikes Peak Radio Amateur Association will be held on November 9 at 7:30 p.m. at the Palmer House Motel on N. Chestnut Street (just north of I-25 and Fillmore.) The program will concern the Red Cross and its relation to amateurs in the Pikes Peak area.

All members and other interested persons are encouraged to attend.

FOR SALE — HW 101 w/ p.s., CW filter & spkr w 2 extra pair of finals including brand new heavy duty 6146W's — \$300. Conrac dual input high resolution monitor \$75. Tom Weatherly ADØO 475-0192.

FOR SALE Kenwood TS 830S, Kenwood TR 2400 w/extra battery pack, MFJ 940B Versa Tuner II, Ham Key straight key, Circuit Board Specialists El Cheapo Keyer, Circuit Board Specialists 750 Hz RC active filter, Yaesu YH 55 phones, Hygain AVT/WBS 80-10 meter vertical, Hygain 2 meter 5/8 wave trunk mount antenna. Larry Augenstein KAØNL 599-7844 after 6.

FOR SALE Swan 270B xcvr w/mobile supply, mount, manuals and mike. Mint condition. \$250. WAØTBJ 596-3522 after 6.



Ø BEAT

**COLORADO SPRINGS,
COLORADO**

Don Lohse KBØKQ
1410 E. LaSalle
Colorado Springs, CO 80907



FIRST CLASS MAIL

Steve & Don Schaeersmidt
KØCI WØTZ
2208 E. Greenwich Cir.
Colo. Spgs., CO 80909

WE MEET
THE
CHALLENGE

